

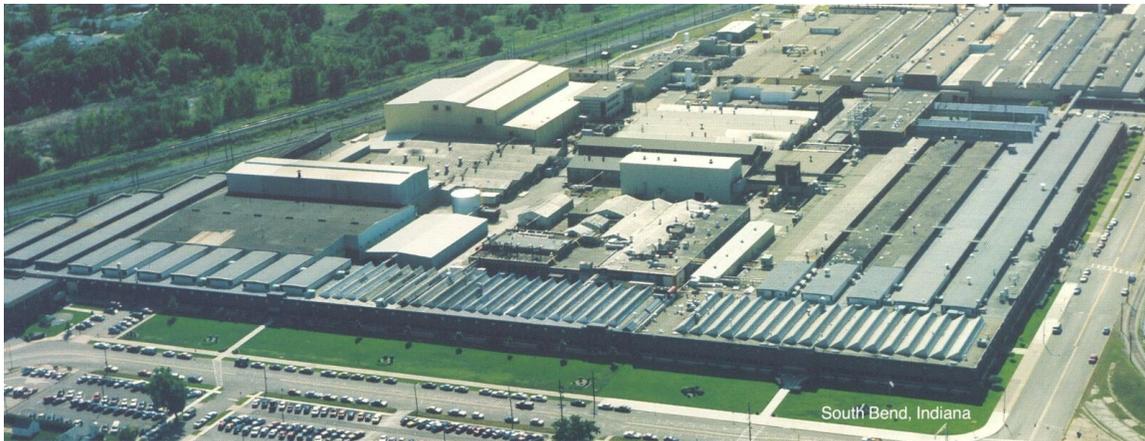
CHAPTER 8

SECTION C

JIM BESEMERS ENGINEERING CAREER

SPANNING A TOTAL OF 42 YEARS

OCTOBER 2nd, 1951 THRU JUNE 1st, 1993



**BENDIX ENGINE CONTROLS DIVISION
SOUTH BEND, INDIANA**

ALSO KNOWN AS:

BENDIX PRODUCTS DIVISION OF THE BENDIX CORPORATION

BENDIX ENGINE CONTROLS DIVISION OF ALLIED SIGNAL

AEROSPACE DIVISION OF HONEYWELL CORPORATION

CHAPTER 8

SECTION C

JIM BESEMER'S ENGINEERING CAREER

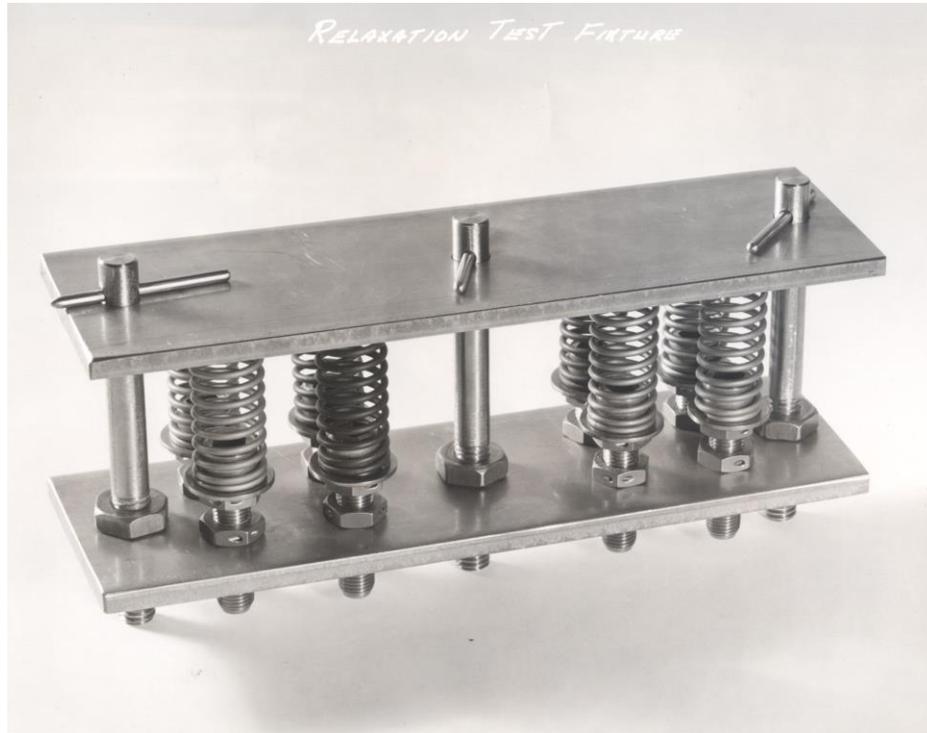
John Makielski, the Bendix personnel director, came to Tri State College in 1951 to interview prospects for employment at the Bendix Energy Controls division in South Bend, Indiana. I had previously worked at Bendix part time during summers and was hired by John during his visit to start the last week of August 1951. So began my 42 year career at the same company with the various names of Bendix, Allied Signal, and lastly Honeywell.

Betty and I were married the year before and she was now pregnant. My first paycheck paid the hospital bill for my wife and James Jonathan, our first born son. I was short clean clothes and made the mistake of wearing one of Betty's larger fuzzy sweaters to work while they were still in the hospital and the guys in the lab wouldn't keep their hands off me. It made for a long day and I certainly never ever did that again! I was making \$225/month and we purchased a Cape Cod type house at 1933 W. Sample Street with the financial down payment help of both our folks to secure a 4% G. I. loan.

All Bendix engineers had to serve at least a one year apprenticeship in the laboratory or the drafting room alternating 1st and 2nd shifts every two weeks and I chose the laboratory learning jet engine fuel control basic functions while calibrating engineering units. I served my time and was then assigned to the Production Liaison Group whose main function was to assist our production operators in calibrating fuel controls and trouble shoot problem units. I eventually had 3 people working in my group and stayed at this task for a number of years. I liked the work and we had great Christmas parties.

I was then moved into the engineering development group and was given the task of developing compression spring design criteria for high temperature applications. We immediately realized that the currently available compression spring calibration devices were not accurate enough for the consistent results we would need and designed an air bearing type spring calibration device that was friction free and incorporated the use of very accurately calibrated dead weights. A spring laboratory was then set up complete with cycle rigs and accurately controlled temperature ovens with a two technician crew. [Dave Ton & Joe Fodor proceeded by George Wachs] I designed a subject test spring out of 0.080 diameter wire and this design was used for all tests regardless of the material from which the spring was made. Hoosier Spring Co. [owner Jim Suth] agreed to make all the test springs and the National Standard Co [chief metallurgist Vince Stanton] did all the wire drawing. We then selected and purchased a number of promising materials, in coil and rod form, and N.S.Co. drew it down to the proper 0.080 test size diameter we needed. The percent of draw down was critical and the each pass was very carefully controlled to assure the proper strength [desired ultimate tensile] of the material. Hoosier coiled the springs and we subjected them to our test programs. Needless to say that later, when designs were established, we purchased and source controlled all our springs and

materials thru these two Companies who had agreed to do their share gratis in exchange for the sharing of information derived from our test programs. Our goal was to produce spring designs capable of operating at 400 degrees Fahrenheit without any deformation or set [loss of height] using standard and simple one temperature heat treatments. All of our precision springs were designed to function within approximately 60% or less of their total deflection or the linear portion of their rate change. Rate was non linear as you initially compressed [15% from free length and as you approached solid height] due to coil closure. We calibrated the test springs prior to and after we had subjected them to various periods of time at temperature and at various load levels.

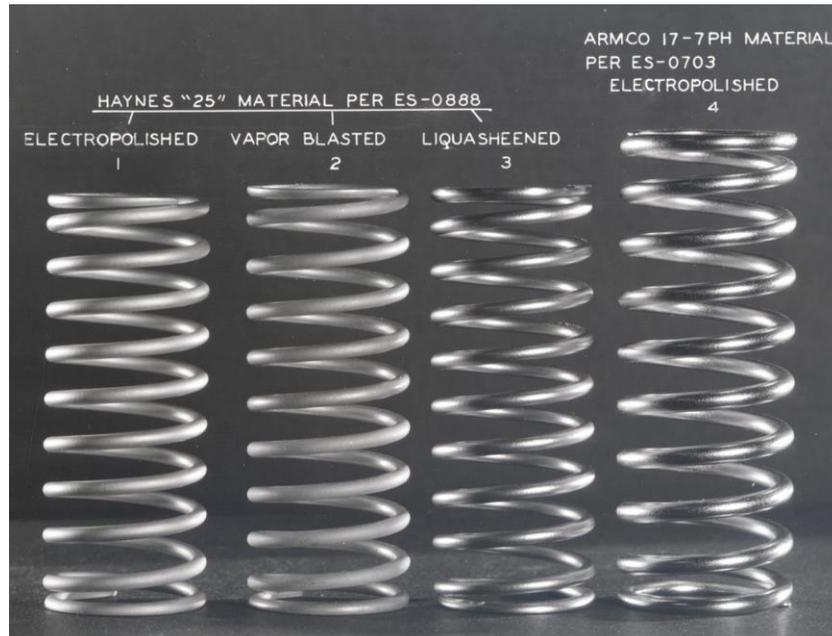


TYPICAL HOT TEST FIXTURE

We were then able to determine that regardless of the stress level, the springs took the most set in the first five hours of temperature exposure. From the data obtained in this test program we were also able to determine the maximum operating stress level for the spring of each material tested. All springs, thereafter, were designed to be closed coil heat set for five hours at 150 degrees above their anticipated operating temperature. This heat set provided temperature stability and also produced a benefit of uniform coil spacing. Operational loads were also not to exceed the stress level that resulted in no deformation after 5 hours exposure to operating temperatures.

We ran a room temperature stress cycle program in conjunction with the hot tests to determine the cyclic life of the springs made from each of the materials. The best temperature resistant material had poor cyclic life so while its temperature stability was excellent; its design stress levels were reduced by its level of cyclic failure. Surface

finish on any spring is critical to its cyclic life therefore we conducted tests of various finishing processes on the two materials we finally selected for our use



In order to use one particular superior temperature stable material [made from Haynes Stellite welding rod] we were forced to center less grind the rod prior to drawing it into wire to eliminate surface flaws. To facilitate the drawing operation small portions of 17-7 material were butt welded to the rod to provide practical lengths for the drawing operation. The welds were easily identified and removed when the wire was coiled into springs.

We also found out that if you simply dropped a spring on the concrete floor it could elongate and if you dropped it compressed under load it may contract. Therefore we also required that our precision springs had to be individually packaged and handled.

The springs produced to the aforementioned design criteria were usually squat with L/D [length over diameter] ratios of 3.0 or less which, of course, reduced their tendency to buckle under load. Some precision springs had to be square in their application and were ground square at their respective operating load heights.

In applications where a constant load or height had to be maintained, bi-metal disks were used in conjunction with the spring to compensate for the modulus change. Once this compression spring criteria was fully developed, I became the resident spring expert and was called "Boing-Boing" by my fellow workers. We also concluded that there was obviously no way we could stabilize [heat set] tension springs and therefore they could only be used in non critical applications.

This three year effort was directed by the requirements of the G.E. J-93 engine program, which in the end, G.E. told us we were too expensive and dropped us from the program

although we had met all their requirements. We scrapped our special steel castings and were much depressed until our engineering received a phone call from Pratt & Whitney in Florida asking if we could help them with their J-58 competitive engine.



J-58 ENGINE ON TEST STAND AT FULL THRUST
WITH BENDIX FUEL CONTROLS

Our people scrambled back to the local Hurwitz junk yard to salvage our previously scrapped steel castings and we were back in business. They changed cam schedules to meet the new engine requirements and I finished the last of over 50 spring designs. They put our first unit on the engine, with a 25 pound adapter, later called the saddle, and it ran the engine perfectly the first time. This control certainly was one of our most successful accomplishments and we were in very good stead with P&WA from that point on. Our chief project engineer on the program, Jim Goerke, was a hero in both plants. It did not hurt our feelings one bit that the P&WA J-58 engine won the contract away from the G.E. J-93. At that time we didn't know where the engine was going but we later found out the finished engines were being shipped to the Lockheed Skunk Works. We were on the fastest military aircraft that holds speed records to this day: the SR-71 [Black Bird] and the engines with our controls were driving that plane three times the speed of sound.

The aircraft pictured below is one of only two aircraft that were specifically configured for pilot training with tandem cockpits and is currently on display at the Kalamazoo, Mi. Aircraft Museum. Neither our steel fuel control nor this predominately titanium aircraft contained any rubber type seals so the airplane leaked fuel on the ground until it warmed up in flight. The tires contained an asbestos additive. We were in solid with P&W and our hydraulic fuel controls were on all their military engines from that point on. We never could get our fuel controls on their commercial engines because they protected their own

fuel control division, Hamilton Standard. One day the pilots came into our plant and told us of their experiences in flying the SR-71 and watching the sun rise in the West as they returned from their missions over the Israel area. In contrast to the U-2 aircraft, which was a high altitude but slow aircraft, the SR-71 was never shot down in any of its flights over Russia or on any other missions. They shot at it but by the time their missile got up to 80,000 feet altitude our plane was long gone.



SR-71 PILOT TRAINING AIRCRAFT

I have left out much of the other spring design criterion that was required in these and later designs so as not to bore readers with excessive detail. To toot my horn a little none of my designs ever failed in their designed application. Vince Stanton and I coauthored an article published in Metallurgical Digest Magazine. We were criticized by the Inconel material people for the low grade we gave their product that required a multiple number of temperature exposures to obtain stability even though our article stressed that we were looking for single heat treatment simplicity at minimum cost.

By this time much of my developed design criteria had been placed in the plant main computer by the cork popper group [computer people] and things were getting a little slow when I got a call to go to Detroit and help out the people working on the Nerva Project which turned out to be a rotary actuator for an atomic pile application. I would drive up on Monday and back on Friday making the huge sum of 8 cents a mile and did

this for almost a year. I wore out our 1957 Dodge. They needed a scram damper, that is, a device to gradually stop the actuator rotation when it was driven closed but it could not bounce like a plain spring stop would. Our Detroit research engineers tried to copy the German strut design for the JU-88 bomber which was a series of Bellville Washers stacked against each other so when the plane landed they gradually compressed with weight but didn't completely recover. [Over simplified] Our Detroit engineers tried to change the angle of the dish [14 degrees] with the result that they went permanently flat. [Bad idea] I remembered that all compression springs tend to bow outward in the middle [become barrel shaped] as they are compressed so I made a slotted steel sleeve to go around the spring to restrict its expansion. When hit with a load it would compress the spring and take the shock but the sleeve wouldn't let the spring return to its normal height till the load was almost fully off. It worked perfectly with no bounce, but unfortunately, we didn't get any follow on orders and the program died. One problem we had was that the Detroit engineers would change the master drawings without recording the change making the assembly of the second prototype very difficult and damn near impossible. We were successful in initiating a drawing change record system like we had in South Bend before we left. I had spent over a year of my time traveling back and forth to Detroit.

From a social aspect, we Bendix engineers did enjoy partying and our Christmas parties were outstanding. I remember one party very early in my career when Buzz Ryder, our chief engineer, stood up and introduced every engineer and staff person as well as their wives [over 100 couples] without making a single error. He was one sharp individual, strict, no bullshit, and well respected. Much food and alcohol was always consumed and it is a miracle that we all got home safely. We had a Christmas party in Rolling Prairie one year and a blizzard occurred while we were partying. On the way home one of the guys made a turn onto the South Shore railroad tracks and had to be towed off and another started home on the wrong side of a divided highway. Fortunately, they all made it home safely in spite of the blizzard conditions.

For the 1963 Christmas party four of us engineers, Bob Statzell, John Nosko, Joe Lumm, and I got together and made up a slide show whose main character was Dick Slipstick the all American engineer with me in the title roll and Betty as my wife of course. We took all kinds of slide pictures depicting a farcical day in a typical Bendix engineer's life. These included pictures that started with Dick getting out of bed in the morning and going to work and his activities at work. We had all kind of taped sounds that Bob Statzell got from the South Bend Tribune. It was all slap stick and after we finally got it all together we were afraid that it wasn't really funny. We were wrong. We did it to a standing ovation from over 250 wives and engineers including top management. They made us go through it twice and it became an imitated tradition from that Christmas party on. When we went east the following summer John Nosko took over the role of Dick Slipstick the next Christmas. I was told he did very well. We were imitated by others thereafter but they never got the results that the first show accomplished. We were heroes for a while. Unfortunately, our slides were lost as subsequent shows used some of our original slides and they all eventually just disappeared.

There was some RIF [reduction in force] activity going on in latter part of 1963 and in 1964 at our South Bend plant I watched the bellows expert and the rubber expert disappear and felt that I, the so called resident spring expert, might be next. They wanted an engineering volunteer to become the Bendix Representative at P&WA in East Hartford, Connecticut and I felt that this might be a secure move as it guaranteed me at least 2 more years of employment. We sold our house on Sample Street, with it's 4% G.I. mortgage, for a loss [The Studebaker plant had just shut down and houses were plentiful] and in the summer of 1964 moved our family to a house Betty and I had found to rent in Wapping, Connecticut across the Podunk river about 10 miles from the P&WA plant. The owner said he wanted to sell it but we could stay there for a year. After I painted the outside and repaired the plumbing and actually improved the place he said we could stay as long as we liked and to just give him a few months notice when we were ready to move out. We actually stayed 3 years. My brother in law, Rick was teaching at Williams College in Williamstown, Mass and we got together with them every so often for weekends. We discussed Desenex applications and climbed mount LeConte. While at their place our son, David, did a free fall from 40 feet up in a cluster of pine trees and survived only by the breaking of dead branches as he fell. The doctor said that he had a slight concussion but with rest would recover even though he was dizzy for several days.

As the Bendix Engineering Representative, it was nothing for me to work 12 & 14 hour days in the plant covering both the production and engineering areas leaving Betty to worry about the kids, house, visitors, and everything else. In the summer, near the end of our second year Betty had what was later diagnosed as nervous exhaustion that was as close to a nervous breakdown as you can get, caused by the strain of managing everything at home while I worked those long hours. She didn't sleep for 4 nights and when our family took a trip home we finally got her knocked out with tranquilizers, thanks to help of my sister in law, Pat Stewart and her doctor. Pats husband Charlie and I got her to my folk's house where she slept for two solid days and nights. When she was able to see the doctor he recommended that she remain in the same environment until she was fully recovered so we volunteered to stay an extra year in the East with the provision that I would work only 8 hour days. Bendix sent out two technicians, Gene Sholley and Jack Longnecker, to cover the busy production areas for me and thereafter I worked normal hours [or less] restricting my efforts to just the engineering areas.

A funny thing happened prior to this problem and might illustrate some of the pressure that I was under. I had two pair of shoes that were exactly alike except one pair was brown and the other was black. To make a long story short, in my haste to get to work one morning, I wore one of each pair of shoes. That's right, one brown and one black. Well I took a hell of a razing in the plant but didn't want to take time to drive home so I kept working. When I got home, the neighbor, who also worked at P&WA, came running across the yard to tell me all about this idiot that wore two different color shoes to work. The whole plant knew it but he didn't know it was me and I never told him.

One day they flew an F-111-A aircraft [picture] into the private Pratt & Whitney airport and we all got to go down to the hanger and see and touch it. It was a good looking plane with the pilot controlled manual ability to position the wings fore or aft depending on the

speed he wanted to go. It had terrain following radar allowing it to move automatically at high speeds and low altitude. Our government, specifically, Bob McNamara, wanted to make it a multiservice all purpose aircraft but because of its weight it proved unsuitable for carrier duty and the U.S.Navy version was cancelled. It was unjustly called the flying Edsel due primarily because of McNamara's crazy multipurpose ideas.



F-111-A

The F-111B bomber version was used to bomb Kaddafi's area which did serve to quiet him down after they hit his palace. We lost one plane and the 2 man crew on that mission. The flight initiated in England and the mission was made much more difficult when both France and Spain refused permission to allow us to over fly their countries thus necessitating extra mid air refueling and much longer flight time.



F-111 AIRCRAFT SEPARATION MODULE

This plane was unique in that the crew cockpit separated as a capsule with its own parachute for high speed bail out emergencies.

The P&WA engineering group was also a good group of social activists; especially the A/B group, [afterburner] and we attended numerous parties and were readily accepted into their society. We had progressive dinners which turned out to be exciting on icy mountain roads at night as you drove to the next house with cocktails to sustain you at each. One guy's wife was pretty horny and she trapped me in the kitchen against the counter at one party. Luckily Bill Protzman, the A/B head engineer and host, came in and helped me escape. I stayed very close to Betty the rest of that evening for that particular broad had really rattled my cage.

In the summer of 1967 we made the transition back to South Bend where I had purchased our current home with Betty only getting to see pictures of it. JoEllen Riggs, Bob's wife and a good friend of ours, recommended it so we bought it and moved into their neighborhood. I had interviewed at GE in Lynn, MA and could have stayed in the East working for them but even with a raise, life was very costly in that area of the country and I turned it down. It was funny that when we came out to Connecticut the people all greeted us then fell back for several months before socializing with us. When we left they were standing on the street and waving with tears in their eyes. It must be the Easterner mind set to be aloof at first.

When we returned to South Bend, I was put into the project group and in charge of a particular production product [the CJ-G6 main fuel control for the P&WA TF-30 engine] and life returned to normal for a while. I then became involved with the development of a wash filter for the F-100 Main and Augmenter fuel controls. Gerald Jacquay had come up with a wash board design for the application that had possibilities and was later [after much test work] accepted as the final design. Unfortunately, we never took time to patent any of his ideas. Gerry tried several years later but it was rejected as too late. A wash filter is basically a tube with holes in the periphery with fuel flowing thru the center of the tube and wash flow of a low quantity is drawn out of the periphery holes to operate the fuel control servos. The velocity of the fuel passing thru the tube serves to wash or clean the periphery holes. The flow velocity is critical and controlled by putting a smaller bullet nosed tube inside and on the center line of the filter. We made the outside diameter of the smaller tube into a washboard or reverse Christmas tree surface to provide turbulence during very low velocity conditions. This turbulence tended to clean the wash filter allowing us to pass the 300 hour dirt tests necessary to qualify our fuel control for the military.

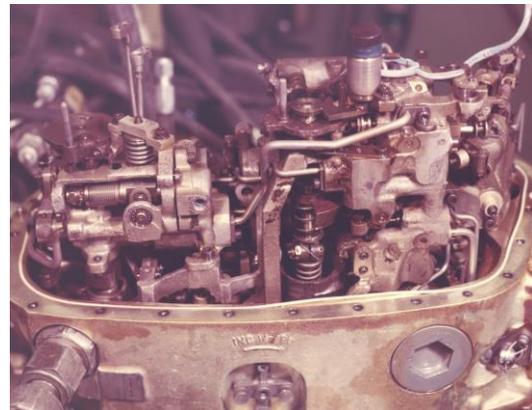
During preliminary component dirt tests we soon realized that some of our hydraulic servo systems had to operate very close to a closed position and that tiny particles of contamination might prevent them from functioning properly so we were forced to provide protective screens for these servos and eventually all servos had what we called "last chance" screens installed on them. These last chance screens were produced by the Wayne Wire Co. in Kalkaska, Michigan who also made our wash filters. I had developed a very personal relationship with these people to the extent that I could call Tom Ropers, their chief engineer, describe the screen size and configuration I needed, and have express delivery of samples many times by the next day. Mike Brown, the sales rep. [now owner] Don Sherman, their Quality Engineer, our purchasing department, Tom and I

became an efficient smooth working team. This worked fine for several years until a change in our purchasing department personnel resulted in some petty jealousy and an unsuccessful attempt was made to break up our working relationship.

We had one scare when the wrong material, 304 instead of 304L indicating low carbon was used [it had been improperly certified] and the screens virtually crumbled in our hands. All the parts purchased from Wayne Wire were to source control drawings. I refused to allow purchasing to go to other suppliers until a so called cost effective program was forced on us many years later by the government in an ill conceived effort to reduce cost. Many of our fuel control parts were too complicated to be thrown to the cheapest bidder for manufacture and this fact soon became very obvious forcing some serious reconsideration by our glorious purchasing department.

Somewhere in this time period we discovered that my wife, Betty, had contracted ovarian cancer. She passed away approximately 18 months later on April 7, 1978 just 6 days prior to her 48th birthday.

Mentally I was not in the best shape but fortunately; I immediately got very busy at work. All our fuel controls had to be qualified in a series of tests; specifically, 100 hours of hot fuel test at 300 degrees F, followed by 300 hours of dirt test and then a 25 hour cold test at -65 degrees demonstrating total functionality throughout all tests without repair. Once each test phase was initiated it was run continually for 24 hours 7 days a week. I had two engineers and two technicians supporting me but the prime responsibility was mine. The control had to pass all these Qualification tests before the military would accept it for production. Lots of mental stress with unusual equipment breakdowns which were bad during the dirt test as you wanted to keep the injected dirt in motion to maintain control function. I used one engineer to record data and write the report so he had very minimum testing responsibility and the other to keep me apprised of any problems when I was not around. It really kept my mind off my loneliness because our butts were dragging by the time these qualification tests were completed. The apprising engineer complained to our project leader that I didn't give him enough responsibility and he went to personnel with his complaint. It may have hurt me with our project leader even if it was unjustified.



INSIDE OF FUEL CONTROL AFTER QUALIFICATION TEST
RUSTY LOOK IS RESIDUAL ARIZONA ROAD DUST

Our project leader and I were not great friends and under him my pay raises were quite meager and almost insulting. I was asked to transfer out of engineering and come to work in the Quality Dept. which I initially refused to accept. They were going to give me a group of three people and if that worked out I was to get the rest of the group. I said give me the whole group at once or I'm not interested at all. They did and my first pay raise was one of the largest I ever got and they were always much better than my project engineering raises from then on. The moral in the Quality group was pretty low so one of the first things I did was call up engineering and loudly chew the poor engineer out so that the whole room could hear me. There were smiles all around me and things perked up after that. It was a deliberate act but it worked. I then repeated this little act every once in a while to help convince my people that there were no Gods in engineering.

My small group was directly responsible to our customers [P&WA, GE, ALLISON, etc.] for all problems related to Bendix fuel controls and was required to have a ready explanation for cause and corrective action. I spent much time on conference calls explaining situations while my superiors sat silently by or occasionally reinforced my statements. It got hairy at times but I enjoyed the pressure and developed a very good rapport and the respect of our customers. I never lied to them. Several years later when they moved me over to supervise the supplier side of things, under protest, because that Dept was all screwed up, my P&WA contacts questioned the move and for a while I hopefully thought I would get transferred back. My supervisors even gave me a private office to persuade me to accept the change in tasks.

Reluctantly, I did accept and inherited a bunch of prima donnas. I had two good men and the rest were much overrated. The first time I did an MBO [performance review] I did shock a bunch of them and made an enemy who unbeknownst to me, on occasion, carried a gun into the plant. He felt that a college education was unnecessary but one only had to read his written reports to see he was wrong. I asked their previous boss how he was able to rate the group so good when they obviously were not. He said they were all good when they worked for him which was obviously not at all true. I even caught one individual falsifying audits and submitting travel expense reports when he hadn't even left town and was forced to have him fired. The gun carrier, who was always a thorn in my side, was finally fired just before I retired, when our Quality Director was replaced by big bad Leroy Brown. Leroy was a big black man, intelligent, gentle of nature, but intolerant of inadequacy, and we hit it off very well. He gave the gun carrier 30 days to quit or be fired. I had tried to for 3 years but the personnel director would not let me do so. She knew that I was dating Lorrie and they had a falling out and Lorrie quit. Her name is irrelevant for that is another story.

I now had my hands full retraining people and taking care of the supplier side of things instead of the customer. I found myself on the road more and a part of a new corporate committee concerned with establishing a corporate supplier system. In this system any one of our different plants within the Corporation could call another plant and ask them to audit a supplier or inspect parts to be shipped.



THE GAINS COMMITTEE REPRESENTING 7 DIVISIONS AT BENDIX FIELD RETURNING FROM AN EAST COAST CONFERENCE VIA A GULFSTREAM AIRCRAFT

It was called the GAINS system and I did even more traveling around the country to attend system coordination meetings at our various plants within the corporation. While this system development activity was interesting, I got more pleasure out of going to a supplier's plant and working on a problem specific to his product. I was allowed to use the company plane, a Cessna Citation, taking along the responsible engineer, purchasing agent, and sometimes our resident metallurgist.



CESSNA CITATION

Jon & John., the pilots, were always considerate of my ear problem when flying and would decompress the aircraft very gradually on decent. I seemed to earn the respect of the suppliers which served to cause me to travel even more as they requested my help. Of course, if a supplier screwed up, after an on site audit, I would be on a conference call to the customer explaining who, why, and what we were doing to immediately correct the problem and its impact on our product.

At this time GE was working with the French developing a turboprop engine for the Douglas DC-9 as a conversion for fuel efficiency and a group of 8 people including myself from our company were sent over to Paris to evaluate the ability of the French to produce our fuel control, under license, in France. I was sent along with a group of project engineers, and my task was to evaluate the French quality systems in the 8 different plants that we visited. I came away very impressed with the ability of the old Hispana-Suzia plant that was making fuel controls for the French jet engines. I thought that allowing them to make our fuel control was a technical give away program and had little enthusiasm for the whole project. I was delighted that it was dropped when new jet engines became more fuel efficient. I did get up in the Eiffel Tower one evening and can say that I know why they call Paris the city of light. The Mona Lisa in the Louve is a surprisingly very small painting and the Notre Dame cathedral is very beautiful. My impression of the French is that they don't like us and even themselves very much and their cuisine is basically tough meat with rich gravy. The fact that my wallet was stolen from my hotel room due to gross stupidity on my part did little to improve my impression of the French.

During this period of my career John Forrest, our lead control project engineer, and I were asked to go down to our Rocky Mount, NC plant on special assignment for a month and evaluate what the problems were in the plant. They had previously sent Dave Finch and I down there for a week and didn't care for what we reported. John and I presented our report and it was not received with a lot of enthusiasm and we were somewhat criticized for its factual, no nonsense, content. In a subsequent top management staff meeting back in South Bend, John was very quiet and I held my tongue but my face was red and I was very angry and barely able to keep myself under control. My boss said later that he was sure I was going to blow but I didn't. We were victims of people that didn't really want to fix the situation, didn't fix it, and eventually forgot about it. [The lip service principal] The real problem was you can't expect people that were used to picking cotton to grasp how to run manufacturing equipment and machines without intense supervision or you'll only generate a lot of non repairable scrap which they did. This is born out by the fact that the plant no longer manufactures parts but now restricts its activity to assembly and test operations which could have been done in South Bend much more efficiently. Incidentally, as I understand it, all of the manufacturing equipment was eventually sold to the Chinese.

Illiteracy in the Rocky Mount, N.C. area was about 3 % but in our plant I think it was a bit higher. We had people who couldn't read on the assembly floor trying to assemble fuel controls from written instruction picture books. To this day I don't know how they got thru the Personnel Department entrance exams. They were the very few exceptions

for most of the people hired were very good conscientious workers eager to do a good job and willing to be trained.

In December of 1992, much to my disappointment, and in spite of my protests, they took my supplier group away from me and gave me the title of Senior Staff Quality Engineer. I was replaced by my much younger lead man who was held in very high regard by the assistant division director. [They both quit a year later.] I could have sued the company for replacing me with a younger man [strictly forbidden] and my immediate supervisor, Tom O'Rielly, advised me not to do so. I agreed, since I really didn't want to leave that way after 42 years, although those that did sue won big. [The company always settled out of court. It was a bad policy and they knew it was wrong and this was eventually discontinued.]

I previously had been working for about 6 months or longer, on the design of a plaque to be presented to our best suppliers and it frosted me when my replacement was allowed to present it to them at the next supplier symposium, held within a month after my title promotion, in the Notre Dame Campus auditorium while I watched from the audience. I walked out in disgust and went home.

I then requested retirement and my last task before retirement was to drive the Quality van around the country for about three months, visiting different suppliers, showing them where their product was assembled into our fuel control and giving lectures on Quality. The motor home had a broken speedometer so my previous immediate supervisor [yes, Tom, who was also demoted.] drove his car in front of me as we traveled to provide speed guidance thru the use of walkie talkie's. I did, however, learn that a motor home can go 85 miles per hour and if you drive that fast you will blow the engine manifolds. I did both. The Quality group gave Tom O'Rielly and me a retirement luncheon at the Studebaker home where I handed out to various specific individuals' wall plaques that had been hanging in my office and made a few very pointed comments.

Two months after I retired they asked me if I'd come back and work on a problem they had with a supplier that I had worked extensively with in Florida. I refused. I would have worked an additional year and retired at age 65, but when they took my group away I lost all interest in the company for which I had worked 42 years. It obviously wasn't Bendix anymore. They called me again 6 months later but I still had no interest in returning.

It is significant to note that the Quality group of over 50 people, that I was once so much a part of, no longer exists.....Two of the best people [and very good friends] that I ever worked with, John Forrest and John Nosko, have both passed away. They will be missed. I still miss the camaraderie of the group of people that I had the good fortune to work with during the time of our careers. Things are no longer what they were in our industry. When I reminisce with people that I have worked with we all agree that we were very fortunate to have worked in industry during our particular time period. It no longer is the same and they would probably no longer tolerate my usual impatient and determined attitude.....